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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,048	07/24/2006	Takahisa Muramoto	28955.1071	3180
27890 7590 07/16/2010 STEP TOE & JOHNSON LLP 1330 CONNECTICUT AVENUE, N.W. WASHINGTON, DC 20036				
EXAMINER				
BASS, DIRK R				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/587,048

Applicant(s)

MURAMOTO ET AL.

Examiner

DIRK BASS

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 15-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

SUPPLEMENTAL FINAL ACTION

Applicant's response filed September 28, 2009 is acknowledged. Claims 1-8, 10-12, and 15-17 are amended, and claims 13-14 are withdrawn from consideration. Claims 1-18 are pending and claims 1-12 and 15-18 are further considered on the merits.

Response to Amendment

In response to applicant's amendments, the examiner modifies the rejections set forth in the office action dated May 27, 2009.

Election/Restrictions

1. Applicant's election with traverse of group I, claims 1-12 and 15-18 in the reply filed on September 28, 2009 is acknowledged. The traversal is on the ground(s) that the search and examination could be made without serious burden. This is not found persuasive because the grounds for restriction did not encompass serious burden. A lack of unity was established between the two groups, there being no common linking feature among said groups that provides a contribution over the prior art.
2. The requirement is still deemed proper and is therefore made **FINAL**.

Claim Rejections - 35 USC § 103

3. **Claims 1-3, 5-6, 8-12, and 15-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Benjamin et al., US 6113792 (Benjamin) in view of Kuronuma et al., JP 2003-266090 (Kuronuma).
4. Regarding claim 1, Benjamin discloses a method for treating water comprising a hardly decomposable substance (abstract), the method comprising:
 - a. Adsorption treatment by adding an adsorbent to raw water containing a hardly decomposable substance (abstract, fig. 7, col. 4, l. 18-37, col. 5, l. 66 - col. 6, l. 8);
 - b. A membrane filtering treatment separating permeated liquid through a filter, said hardly decomposable substance adsorbed thereon (col. 5, l. 66 -col. 6, l. 29); and

- c. Chemically decomposing the hardly decomposable substance adsorbed on said concentrated adsorbent without any desorption from said adsorbent (col. 6, l. 30-50).
5. Benjamin does not explicitly disclose passing the adsorbent water through a plurality of membrane filter elements. However, Benjamin discloses using a circulation loop where the adsorbent and influent are passed through the same filtration system multiple times until a reduction in the degree of removal is observed (col. 6, l. 10-24). At the time of invention, it would have been obvious to one having ordinary skill in the art to use a plurality of filter elements since the examiner notes the equivalence of multiple filter elements and a recirculating system comprising a single filter element for their use in the particle separation art, and that the selection of any of these known equivalents would be within the level of ordinary skill in the art (MPEP 2144.06).
6. Furthermore, it would have been obvious to one skilled in the art at the time the invention was made to include multiple filter membranes for a plurality of membrane filtering treatments, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art and that performing multiple filtering treatments would have produced reliable and predictable results such as increased concentrations of adsorbent collected on said membranes (MPEP 2144.04, Section VI, Part B).
7. Benjamin does not explicitly disclose a method where the chemical decomposition is performed with peroxide. However, Kuronuma discloses a method of treating hardly decomposable substance containing water (§ 0001, fig. 1) comprising decomposing the hardly decomposable substance with peroxide (§ 0018 and Claim 2).
8. At the time of invention, it would have been obvious to use the peroxide decomposition substance of Kuronuma in the method of Benjamin since Benjamin discloses using highly basic environments to regenerate the adsorbent particles and the selection of a particular material such as peroxide on the basis of its suitability for the intended use is a matter of obvious design choice (MPEP 2144.07).
9. Regarding claim 2, Benjamin in view of Kuronuma does not appear to explicitly disclose using peroxide in the amount recited in claim 2. However, Kuronuma discloses

that the amount of peroxide used is optimized to consider both cost and the amount of peroxide needed to remove harmful constituents (§ 0018). At the time of invention, it would have been obvious to a routineer in the art to optimize the concentration of peroxide relative to the amount of hardly decomposable substance since Kuronuma recognizes the concentration relative to the hardly decomposable substance is a result effective variable and that discovering an optimum value of a result effective variable involves only routine skill in the art (MPEP 2144.05, Section II, Part B).

10. Regarding claims 3 and 10, Benjamin in view of Kuronuma discloses a method further comprising a membrane concentrating treatment separating permeated liquid from the water containing hardly decomposable substance by passing it through a reverse osmosis membrane or a nanofilter membrane (fig. 7 and col. 3, l. 47-65).

11. Regarding claim 5, Kuronuma further discloses carrying out irradiation with ultraviolet light to decompose the hardly decomposable substance (§ 0018).

12. Regarding claim 6, Benjamin in view of Kuronuma discloses a method comprising backwashing the filter membranes (col. 6, l. 23-26).

13. Regarding claim 8, Benjamin in view of Kuronuma discloses a method wherein the adsorbent is an inorganic adsorbent (abstract).

14. Regarding claim 9, Kuronuma further discloses using titanium dioxide as the adsorbent (§ 0014).

15. Regarding claim 11, Benjamin in view of Kuronuma does not appear to explicitly disclose a method wherein the peroxide is a persulfate. However, at the time of invention it would have been obvious to a routineer in the art to use a persulfate, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice (MPEP 2144.07).

16. Regarding claim 12, Benjamin in view of Kuronuma discloses a method comprising recirculating the adsorbent with hardly decomposable substance (col. 6, l. 10-24).

17. Regarding claims 15-18, Benjamin in view of Kuronuma is relied upon in the rejections set forth above.

18. **Claims 4 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Benjamin in view of Kuronuma as applied to claim 1, and in further view of Obata et al., US 5571419 (Obata).

19. Regarding claim 4, Benjamin in view of Kuronuma does not appear to expressly disclose neutralizing chlorine in the water. However, it is well known to remove free chlorine from raw water prior to treatment as shown by Obata. Obata discloses a waste water treatment apparatus and method (abstract) where reducing agent is injected into raw water so as to remove chlorine prior to treatment (fig. 2 and col. 6, l. 31-49). The motivation to include chlorine neutralization in the method of Benjamin in view of Kunomura would have been to improve recovery of pure water by avoiding contamination in later process steps caused by the presence of free chlorine.

20. Regarding claim 11, Obata further discloses using persulfates as an oxidizer in wastewater treatment (col. 4, l. 28-31) in order to decompose substances.

21. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Benjamin in view of Kuronuma as applied to claim 1, and in further view of Krulik et al., US 6652758 (Kruklik).

Benjamin in view of Kuronuma fails to explicitly disclose the addition of a flocculating agent. However, Krulik discloses adding a flocculating agent (fig. 1, Ref. 120) to water containing the adsorbent (112), to flocculate and separate the adsorbent adsorbing the hardly decomposable substance.

At the time of invention, it would have been obvious to one skilled in the art to add the flocculating agent of Krulik to the method of Suzuki in order to help reduce and separate the concentration of harmful adsorbent components in the water (col. 4, l. 33-48).

Response to Arguments

22. Applicant's arguments with respect to claims 1-12, and 15-18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

23. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIRK BASS whose telephone number is (571) 270-7370. The examiner can normally be reached on Mon - Fri (9am-4pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Krishnan S Menon/
Primary Examiner, Art Unit 1797

/DRB/
Dirk R. Bass